der Hoeven; but a comparison of the two figures will at once show the difference, *P. Payeni* being much smaller and not having the posterior wings dentate, and also wanting the broad deep brown band below.

[To be continued.]

XXVII.—*On the Surface of the Stem and Contents of the Medullary Cells of* Nuphar lutea (*Smith*). By Julius Münter*.

Although the internal structure of the submersed stems of *Nuphar lutea*, Sm., is but little adapted for indicating the dicotyledonous nature of the *Nymphæaceæ*, still in other respects it possesses so much interest, that it appears well-worthy of a special notice in these pages. The stem of the yellow water-lily is found in tolerably deep stagnant waters, lakes and large rivers; its length is 5 feet or more, and its diameter from $2\frac{1}{2}$ to 3 inches; it is sometimes simple and sometimes branched, and sends off from its summit to the surface of the water its floating leaves and beautiful flowers on smooth footstalks, which are often 6 to 8 inches long. The stem is sometimes brought to the surface of the water or the banks either by the net of the fisherman or the drying up of the water, and we are then enabled to examine it more accurately.

The entire surface of the stem is coated with elastic leaf-scars directed obliquely from above downwards, as in the stems of the *Cycadeæ*, and the torn bundles of woody fibre are indicated on these scars. We do not, however, usually find any buds in the angles of the leaf-scars, and in such a case not even the slightest trace of one. But where the buds situated in the angles are developed, they form a branch directed almost at right angles to the axis, which soon acquires the thickness of the stem. A little below the leaf-stalk scars, which are arranged circularly around the stem, we find single or grouped foveolæ of the size of a pea, of a more or less rounded form, which are either arranged beneath these leaf-scars around the stem, or are only visible on those parts of its surface directed towards the soil. When these foveolæ are grouped, three, five or six together, the lower ones are usually larger than the upper, and on minutely examining them we find a remarkable resemblance of each foveole to the cavity of the human acetabulum. In the former a circular protuberance (limbus) surrounds the foveoles, as in the latter, but this has in addition a notch at its lower part; we then find on the inner surface of the pit a ring running parallel with the limb, *i. e.* con-

* Translated from the Botanische Zeitung, Aug. 1845.

centric; at the bottom of the pit a bundle of woody fibres, broken off, but still somewhat projecting, like the ligamentum teres of the human acetabulum; the surface of the pit between this woody bundle and the ring-shaped scar is smooth, and presents nothing remarkable. As regards the nature of these elegant pit-like scars, by comparing all parts of the surface we soon perceive that they owe their origin to roots, which *separate spontaneously*; this view is confirmed by tracing the course of the separation. Even whilst the root is perfectly entire, the bark of the stem is raised from the surface of the latter, and gives rise to the above-mentioned limb. The concentric ring on the inner surface of the pit is formed by the separation of the bark of the root from that of the stem, and the broken-off woody bundle found in the bottom of the pit was previously continuous with the central woody bundle of the root.

Besides this interesting formation of scars from the spontaneous separation of roots, a phænomenon which I have never elsewhere observed, the solid contents of the cells of the highly developed pith excited particular interest.

If we examine microscopically that portion of the stem most remote from the buds placed on the summit, we find that the contents of the cells do not assume any definite shape, but form a parenchymatous tissue filled with water or air. At the distance of 2—3 inches, however, and especially just beneath the buds on the summit, all the cells of the pith are filled with a solid substance which has a definite form, is coloured blue on the addition of aqueous solution of iodine, and consequently agrees in properties with starch. As regards the forms of the particles, some are simple, more or less rounded cells; others are hemispherical, and formed of two grains lying in contact like rolls; again, others form segments of circles, and derive their shape from the union of three double grains, and are arranged either in a linear or superficial manner: we also observe granules which are formed from the union of four, and finally perfect penta- and polyhedra.

Whilst these forms agree most distinctly with those of the starch particles which I found and described in *Gloriosa superba*, their size forms also another point of similitude; it cannot indeed be asserted that the *Nuphar* starch in general exhibits such large particles as the *Gloriosa*, but it most resembles it in the relative size of the separate granules; in it the internal layers are as sharply outlined as in the *Gloriosa* starch, and thus afford a good substitute for the latter, which is so difficult to obtain. For this reason I recommend the *Nuphar* starch as an excellent example for those who have occasion to demonstrate microscopically; and also to those who may think it worth while to test my view of the centripetal formation of the starch granules, as I am

unacquainted with any other plant, except the *Gloriosa*, which exhibits the innermost layers of the compound starch forms with such remarkable distinctness.

XXVIII.—*Note on some Marine Animals, brought up by Deep-sea Dredging, during the Antarctic Voyage of* Captain Sir James C. Ross, R.N.

To Richard Taylor, Esq.

My dear Sir, West Park, Kew, Aug. 31, 1845.

Having remarked, in the notice given of Mr. Goodsir's valuable labours in the last number of the 'Annals of Nat. Hist.,' that 300 fathoms is supposed to be the extreme depth from which living animals have been dredged, I think it may interest some of your readers to know that Sir James Ross, during the late Antarctic Voyage, used the dredge on several occasions with considerable success in the same and in much deeper water.

In latitude 33° 32′ S. and long. 167° 40′ E., living specimens of *Hornera frondosa*, besides four other Corals, a *Dictrupia*, two *Ophiuræ*, an Annelide, one small *Echinus* (and the spines of another, three inches in length), were all procured in a living state from 400 fathoms.

Off Victoria Land, between the parallels of 71° and 78° of south latitude, the dredge was repeatedly employed; once with great success at 380 fathoms. Generally the contents of the net, after dredging at between 200 and 400 fathoms in these latitudes, were various Crustacea, as numerous *Nymphia*, *Pycnogona* of a very large size, and such Arctic genera as *Crangon*, *Alpheus*, *Gammarus* and *Idotea*, the species sometimes resembling very closely indeed those that Capt. Ross had met with during the North Polar voyages: of Mollusca, the genus *Chiton*, *Boltenia*, and the remains of both univalve and bivalve shells, of which we found no traces on the lands we visited; various Annelides and *Serpulæ*, *Ophiuræ* and *Asteriæ*, *Alectos*, *Bicellariæ*, an Encrinite resembling the Irish one, very many *Virgulariæ* and Sponges, with *Holothuriæ* several inches in length. The pebbles were generally covered with *Flustræ*; but on one occasion a magnificent mass of syenite was procured, the edges of which were sharp and the surface clean; it must have been but recently deposited by an iceberg, for the greater proportion of the stones around were of trap or basalt of various kinds.

The most remarkable circumstance connected with this subject of deep-sea dredging is, that the bottom of the Antarctic Ocean, near the lands visited by Sir James Ross, was found to be covered with a mud consisting in great part of the remains of Infusoria,